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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,164	01/28/2002	Katsuhiko Mori	F-7216	8323

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EXAMINER	
RUTHKOSKY, MARK	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/009,164	MORI ET AL.	
	Examiner	Art Unit	
	Mark Ruthkosky	1745	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *2-8 and 10-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *10-12* is/are allowed.

6)☐ Claim(s) *2-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The rejection of claim 7 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been overcome by the applicant's amendment.

Claim Rejections - 35 USC § 102

The rejection of claims 1, 6-8 and 13 under 35 U.S.C. 102(b) as being anticipated by Okada et al. (US 6,174,620) has been overcome by the applicant's amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 6,174,620) in view of Moriwaki et al. (US 6,333,124.)

The instant claims are to a prismatic battery case having a substantially rectangular cross-section comprising substantially rectangular shorter side plates, longer side plates connecting the shorter side plates along side edges; and a bottom plate connecting bottom edges of said shorter side plates and said longer side plates wherein the shorter side plates are larger in thickness than

the longer side plates such that a thickness of the shorter side plates is A, that a thickness of the longer side plates is B, and that a thickness of the bottom plate is C and the relationship is given as:

$B = \alpha A$ wherein α is greater than 0.6 and less than 1.0, and

$A = \beta C$ wherein β is greater than 0.2 and less than 0.8.

Okada et al. (US 6,174,620) teaches a prismatic battery case having a substantially rectangular cross-section comprising a substantially rectangular shorter side plate and a longer side plate wherein the shorter side plate is larger in thickness than the longer side plate (claims 1-11.) Both sidewalls are around a portion to be sealed. The short sidewall is 10% larger than the other sidewall (table 2, col. 5 shows a short side wall of 0.7 mm and a long side wall of 0.5 mm.) Aluminum alloys are noted as the casing material. With regard to claim 2, the reference does not teach a relationship wherein the thickness of the shorter sidewall plate is in the range of (0.2<0.8) of the thickness of bottom plate of battery casing. With regard to claim 2, the reference does not teach the case to be processed to have a Vickers hardness of 1.5 times or larger than an unprocessed material. With regard to claim7, the reference does not teach the walls to have a top wall portion that is greater than 10% larger than the bottom wall portion of the can.

Moriwaki et al., however, teaches a prismatic battery that has an aluminum alloy casing with a thickness of the sidewall in the range of ($0.2 < 0.8$) of the thickness of bottom plate of battery casing (see the claims.) The aluminum casing is treated to have a Vickers hardness at least 1.5 times the metal prior to the formation of the case (see claims 1-28 and cols. 6 and 9 for

examples.) The casing walls have a top wall portion of the can that is greater than 10% larger than the bottom wall portion of the can.

It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare the casing of Okada et al. (US 6,174,620) with a bottom plate having a greater thickness than the sidewalls of the battery casing as taught by Moriwaki et al.

It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare the casing of Okada et al. (US 6,174,620) having an aluminum casing treated to have a Vickers hardness of at least 1.5 times the metal prior to the formation of the case as taught by Moriwaki et al.

It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare the casing of Okada et al. (US 6,174,620) with casing walls having a top wall portion of the can that is greater than 10% larger than the bottom wall portion of the can as taught by Moriwaki et al.

Moriwaki et al. shows that using an aluminum alloy casing 1) with a thickness of the sidewall in the range of (0.2<0.8) of the thickness of bottom plate and 2) a Vickers hardness of 1.5 times or larger than an unprocessed material, will provide a light weight battery with thin walls and a that will have a corresponding high battery energy density. The casing will provide a strong, light weight housing for the electrode assembly while decreasing the amount of space occupied by the casing, thus allowing for increased active material and a higher battery capacity (col. 5, lines 15-65.) Moriwaki et al. teaches that the increase thickness at the top of the sidewall provides increased tolerance to pressures at the portion of the cover sealing the battery at the sidewalls. The references teach that increasing the bottom wall and sidewall thicknesses of the

battery can provide increase durability of a battery can wit these features. The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Claims 2-5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al. (US 6,333,124) in view of Okada et al. (US 6,174,620.)

Moriwaki et al. teaches that using an aluminum alloy casing 1) with a thickness of the sidewall in the range of (0.2<0.8) of the thickness of bottom plate and 2) a Vickers hardness of 1.5 times or larger than an unprocessed material, will provide a light weight battery with thin walls and a that will have a corresponding high battery energy density. The casing will provide a strong, light weight housing for the electrode assembly while decreasing the amount of space occupied by the casing, thus allowing for increased active material and a higher battery capacity (col. 5, lines 15-65.) Moriwaki et al. teaches that the increase thickness at the top of the sidewall provides increased tolerance to pressures at the portion of the cover sealing the battery at the sidewalls. A prismatic battery casing made of carbon steel is noted that is composed of iron with 0.1% or less of carbon and titanium or niobium. The casing is treated to have a Vickers hardness at least 1.5 times the metal prior to the formation of the case (see the claims.) The casing is prepared by DI-processing and a punched, circular cross-section is noted, (see col. 6, lines 16-65 and col. 10, lines 10-60.) The reference does not teach the walls to have a thickness greater in a shorter sidewall than a longer sidewall.

Okada et al. (US 6,174,620) teaches a prismatic battery case having a substantially rectangular cross-section comprising a substantially rectangular shorter side plate and a longer side plate wherein the shorter side plate is larger in thickness than the longer side plate (claims 1-

11.) Both sidewalls are around a portion to be sealed and one sidewall is 10% larger than the other sidewall. Aluminum alloys are noted as the casing material. It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare the battery of Moriwaki et al. with a thickness greater in a shorter side-wall than a longer side wall as Okada et al. (US 6,174,620) teaches a battery with this shape and thickness has increase strength and is not easily deformed due to high inner pressures (col. 2.) Further, the weight and surface area of the casing decreases allowing for a higher battery capacity (col. 6 of '620.)

The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Allowable Subject Matter

Claims 10-12 are allowed.

The following is an examiner's statement of reasons for allowance:

The instant claims are to method manufacturing a prismatic battery case comprising a first process step for forming a first intermediate cup element, a second process step for forming a second intermediate cup element having a substantially elliptic cross section which is smaller in minor-axis-diameter to major-axis-diameter ratio than the cross section of the first intermediate cup element by subjecting the first intermediate cup element to redrawing successively in a plural stages; and a third process step for forming a prismatic battery case having a substantially rectangular cross section in which a shorter-side plate is made larger in thickness a longer-side plate by subjecting the second intermediate cup element to DI processing, wherein drawing and ironing are performed successively at a time.

The reference does not teach the process, as claimed including the step wherein an intermediate cup element is prepared with a substantially elliptic cross section, which is smaller in minor axis diameter to major axis diameter ration than the cross section of the first intermediate cup followed by a step of subjecting the second intermediate cup element to DI processing, wherein drawing and ironing are performed successively at a time. As the process of the prior art does not include this step, the process is allowed over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed 9/13/2004 have been fully considered but they are not persuasive.

With regard to the applicant's comments to the rejection under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 6,174,620) in view of Moriwaki et al. (US 6,333,124), it is noted that the primary reference to Okada et al. (US 6,174,620) teaches a prismatic battery case having a substantially rectangular cross-section comprising a substantially rectangular shorter side plate and a longer side plate wherein the shorter side plate is larger in thickness than the longer side plate (claims 1-11.)

With regard to the applicant's comments to the rejection under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al. (US 6,333,124) in view of Okada et al. (US 6,174,620), the

applicant argues that claims 10-12 are in allowable form. These claims are noted as allowable in the previous section. No arguments are presented to the rejection of claims 3-5.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745

Mark Ruthkosky
11/24/04